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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/988,634

11/20/2001

Makoto Yamada

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8784

7590

09/20/2004

SUGHRUE, MION, ZINN
MACPEAK & SEAS, PLLC
Suite 800
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3213

EXAMINER

TUCKER, WESLEY J

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 09/20/2004

3

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/988,634

Applicant(s)

YAMADA, MAKOTO

Examiner

Wes Tucker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over the document entitled "High-Resolution Multi-Spectral Image Archive: A Hybrid Approach" published by Francisco H. Imai and Roy S. Berns hereinafter referred to as Imai in view of U.S. Patent 6,631,204 to Smith.

With regard to claim 1, Imai discloses a method of processing image data in which two images obtained by photographing an identical subject, a first image being of large pixel number and small channel number and a second image being of small pixel number and large channel number, are combined to create a third image of large pixel number and large channel number (p.224, abstract).

Imai further discloses performing principal component analysis (p.225, section titled Spectral Analysis) on the image data in a specified region including a point in said second image of small pixel number and large channel number which corresponds to a pixel of interest at a specified point in said first image of large pixel number and small

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channel number (p.225, section titled Image Fusion). Here the first step in the process of combining the images is geometric registration and alignment, which is interpreted as matching pixel locations between the two images.

Imai does not explicitly disclose determining coefficients in linear sums so that said linear sums of a specified number of principal component vectors obtained by said principal component analysis render output values of said pixel of interest in said first image of large pixel number and small channel number. However principal component analysis is also known as eigenvector analysis, and this kind of analysis is often used to determine similarity, registration, and alignment in images. Smith discloses an eigenvector analysis wherein similarity between two images is determined and used to classify images according to the best match. The eigenvector analysis causes the images to be represented by as a weighted linear combination of the eigenvectors, which are represented with coefficients (abstract and column 3, lines 56-67 and column 4, lines 1-17). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to use eigenvector analysis otherwise known as principle component analysis using the coefficient values as taught by Smith in order to determine similarity, registration or alignment of images in the principle component analysis of Imai. Rendering output values of said pixel of interest in said first image of large pixel number and small channel number is interpreted as determining the registration, alignment, or overall similarity in the two images.

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Imai further discloses determining spectral information of said pixel of interest based on said coefficients to create said third image of large pixel number and large channel number (p.225 section titled Spectral Analysis and section titled Image Fusion). Here Imai discloses how spectral information is used along with principle component analysis to calculate the spectral reflectance of the low resolution image and then in the image fusion section a description is given of how the images are made into one.

With regard to claims 3 and 5 the discussion of claim 1 applies.

Claims 2, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the document entitled "High-Resolution Multi-Spectral Image Archive: A Hybrid Approach" published by Francisco H. Imai and Roy S. Berns hereinafter referred to as Imai in view of U.S. Patent 6,631,204 to Smith and further in view of U.S. Patent 6,711,291 to Stubler et al.

With regard to claim 2, Imai and Smith disclose the method according to claim 1, but do not explicitly disclose a silver halide camera and scanner or a digital camera. However these devices are well known in the art as means for acquiring digital images. Stubler discloses both methods of image acquisition (column 3, lines 50-57). Therefore it would be obvious to one of ordinary skill in the art at the time of invention to use both of the methods for digital image acquisition methods as taught by Stubler in the image processing of Imai and Smith in order to easily acquire images.

With regard to claims 4 and 6, the discussion of claim 2 applies.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 703-305-6700. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker

9-15-04


Jon Chang
Primary Examiner